

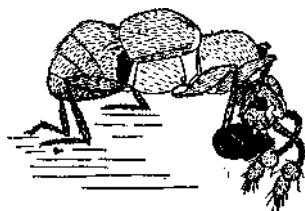
Bulletin of the Chicago Academy of Sciences

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New and Little Known Reichenbachia
(Coleoptera: Pselaphidae) from Guerrero, and
their Zoogeographic Integration

ORLANDO PARK
Northwestern University

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Observations on <i>Batrisodes</i> (Coleoptera: Pselaphidae) , with particular reference to the American species east of the Rocky Mountains, <i>Ibid.</i> , vol. 8, 1947, no. 3, p. 45-132, pl. 1-11.	\$ 1.60
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The Bulletin of the Chicago Academy of Sciences was initiated in 1883 and volumes 1 to 4 were published prior to June, 1913. During the following twenty-year period it was not issued. Volumes 1, 2, and 4 contain technical or semi-technical papers on various subjects in the natural sciences. Volume 3 contains museum reports, descriptions of museum exhibits, and announcements.

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Bulletin of the Chicago Academy of Sciences

New and Little Known *Reichenbachia* (Coleoptera: Pselaphidae) from Guerrero, and their Zoogeographic Integration

ORLANDO PARK
Northwestern University

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INTRODUCTION

The occasion for this paper is an analysis of a small but very interesting collection of pselaphids made by Dr. Dwight M. DeLong, of Ohio State University. The beetles were taken at light on the night of October 22, 1941, at Chilpancingo, Guerrero, Mexico.

Dr. DeLong sent the specimens to Dr. Milton W. Sanderson, of the Illinois Natural History Survey, who in turn gave them to me. I wish to thank both of these gentlemen for their kindness. The type specimen of a new species, described in this article, is in the collection of the author.

Whereas any increment to our knowledge of Mexican pselaphids is most welcome, information on the fauna of the Pacific Slope is especially desirable in view of the great relative paucity of data. The zoogeographic bearing of this collection is discussed later.

***Reichenbachia biocellata* (Schaufuss)**

Redescription. Male. Measurements: head 0.37 mm. long (labral suture to temporal angles) x 0.39 mm. wide (through eyes) ; pronotum 0.42 mm. x 0.47 mm.; elytra 0.60 mm. x 0.87 mm.; abdomen 0.37 mm. x 0.77 mm.; total length 1.76 mm.

Uniform yellowish brown. Flavous pubescence very short and inconspicuous. Integuments polished, very inconspicuously punctulate.

Head with prominent eyes and normally convex vertex; trifoveate; the frontal fovea, between the antennal tubercles, slightly inclined, elongate, with the posterior portion densely pubescent; vertexal foveae relatively very abnormal, of tremendous size, each fovea about one-fourth of the total head width in diameter (0.10 mm.) , deep, with dense foveal pubescence; frontoclypeus declivous, medianly narrowed between large antennal cavities, simple, bearing longer setae; mandibles simple, not bearing teeth on the external rami; ventral surface of head and maxillary palpi as for genus. Pl. **I**, **1**.

Antennae eleven-segmented, abnormal; segment **I** elongate; **II** slightly longer than wide, slightly narrower than first; **III** obconical, narrower than second; **IV** elongate, longer than third, subequal to third in width; **V** elongate, slightly more than twice as long as wide, distinctly longer than fourth; **VI** elongate, almost three times as long as wide, distinctly longer than fifth; **VII** slightly longer than wide, about as long as third; **VIII** smallest segment, quadrate; **IX** and **X** simple, obtrapezoidal, progressively larger; **XI** simple, wider than tenth and about as long as eighth, ninth, and tenth segments united. Pl. **I**, **2**.

Pronotum normal for the genus, with a small, elongate, nude median basal fovea, and a pair of circular, larger, pubescent antebasal foveae. These lateral antebasal foveae appear smaller by contrast with the excessively large vertexal foveae, although they are normal in size, each fovea having a diameter of 0.06 mm.

Elytra trifoveate; sutural stria entire; discal stria long, arcuate, extending to apical three-fourths.

Basal abdominal carinae of first visible tergite short and widely separated, one-seventh of the segmental length and separated by one-third of the segmental width. Metasternum medianly tumid, the tumidity flattened and bisected by a longitudinal sulcoid impression. Legs simple.

Redescribed on a male specimen taken from Chilpancingo, Guerrero, Mexico, at 4100 feet elevation, at light, October 22, 1941 by Dr. Dwight M. DeLong.

Reichenbachia biocellata (Schaufuss) is a member of Group XLI. The finding and allocation of this species is specially gratifying since it reduces to four the number of species of *Reichenbachia* known from Mexico but not keyed out or allocated to generic groups (Park, 1945, p. 385). This species was described briefly by Schaufuss (1887, p. 127) from Mexico, without further locality. Raffray (1904) did not know *Bryaxis biocellata* Schaufuss, and assigned it with great doubt to the genus *Reichenbachia*, but without group allocation. This course was followed by Park (1942, 1944, p. 256, 1945).

The Chilpancingo record places *biocellata* in the Sierra Madre del Sur physiographic region of Hoy (1943). In terms of the biotic provinces of Smith (1940), based on the distribution of lizards of the genus *Sceloporus*, *biocellata* is known at present from the upper limit of the Lower Balsan province, where the nearctic Guerreran merges with the neotropical Lower Balsan.

***Reichenbachia reichei* (Schaufuss)**

This is one of the better known species of the neotropical fauna. It was described briefly as *Bryaxis reichei* by Schaufuss (1872, p. 264) from Colombia and Guatemala, and later reported again from San Gerónimo, Guatemala by Sharp (1887, p. 27). It was allocated to Group LIII of *Reichenbachia* by Raffray (1904). The male sex was redescribed, and male antenna figured by Park (1944, p. 240, Pl. II, fig. 8), on a male taken at light at Acapulco, Guerrero, Mexico. The range of the species was extended by Park (1945, p. 365) from several additional Pacific Slope localities in Mexico, and the female sex described for this species. These additional records are from Tonalá, Chiapas at 120 feet elevation; Huetamo, Michoacan, bordering on Guerrero, near the Rio Balsas; Cuautla, Morelos at 3600 feet elevation.

The DeLong collection contained six specimens of *reichei* from Chilpancingo, Guerrero at 4100 feet.

From these several records it is possible to draw several conclusions regarding *reichei* in Mexico. (1) The species is a member of the Neotropical fauna. (2) It is restricted to the Pacific Slope area as discussed previously (Park, 1943, p. 207-216, Pl. III). (3) It has a known altitude range from sea level to 4100 feet. (4) It is nocturnal in its normal activity pattern. (5) Its known seasonal range, based on records of adults flying to lights at night, is from August 22 to December 8. These

records are December 8, 1932 (Tonalá, Chiapas); August 22, 1933 (Huetamo, Michoacán); September 2, 23, and 25, 1937 (Cuautla, Morelos) ; August 28, 1938 (Acapulco, Guerrero) ; October 22, 1941 (Chilpancingo, Guerrero) . (6) Its range is from southern Michoacan to the center of the coast of Chiapas, in Mexico, as well as the older records from Guatemala and Colombia. In its Mexican range, *reichei* is known from the Lower Balsan and Tapachulan provinces of Smith (1940) , the only gap being lack of records from the intermediate Tehuantepecan province along the coast of Oaxaca (Fig. 1) .

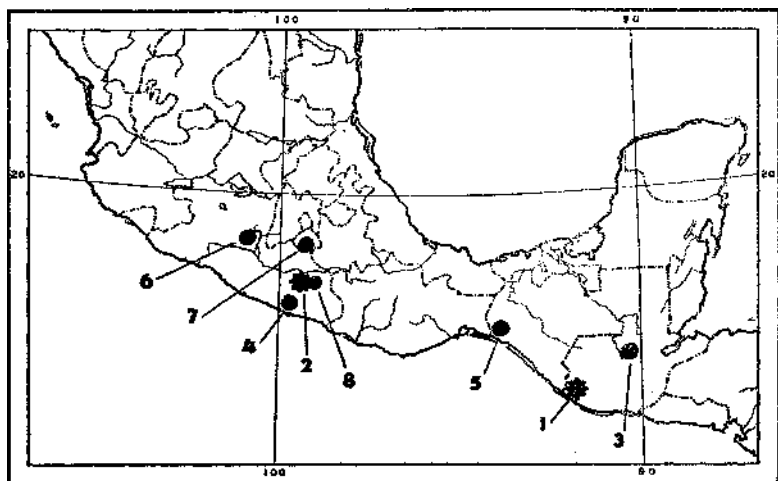


Figure 1. Known distribution of *Reichenbachia bicuspidata* Park and *Reichenbachia reichei* (Schaufuss) in Mexico and Guatemala.

bicuspidata: 1. Puerto de Ocos, Guatemala; 2. Chilpancingo, Guerrero.

reichei: 3. San Geronimo, Guatemala; 4. Acapulco, Guerrero; 5. Tonalá, Chiapas; 6. Huetamo, Michoacan; 7. Cuautla, Morelos; 8. Chilpancingo, Guerrero.

Scale: 1 inch, 400 miles.

Reichenbachia bicuspidata Park

This species is a member of Group LIV, known previously from Puerto de Ocos, Guatemala (Park, 1945, p. 368) . This locality is just over the border from Chiapas, in the Pacific coastal extension of the Mexican Tapachulan province of Smith (1940) .

A second record of this species is added now by a single male in the DeLong collection, from Chilpancingo, Guerrero at 4100 feet elevation.

This is another instance in which the same species **of the genus is** known from the Lower Balsan and Tapachulan provinces (Fig. 1).

***Reichenbachia delongi* new species**

Type. Male. Measurements: head 0.38 mm. long (labral suture to occiput) x 0.42 mm. wide (through eyes); pronotum 0.39 mm. x 0.47 mm.; elytra 0.56 mm. x 0.87 mm.; abdomen 0.47 mm x 0.80 mm.; total length 1.8 mm.

Reddish brown with paler elytra and palpi. Flavous pubescence moderately long and conspicuous. Integuments polished and inconspicuously punctulate.

Head (Pl. I, 3) with prominent eyes and normally convex vertex; bifoveate; frontal fovea absent; vertexal foveae of normal size, pubescent, mutually twice as far apart as either from its adjacent eye. Fronto-clypeus complex: steeply declivous between antennal articulations, with a pair of shallow, remote depressions on the subvertical, pubescent frontal wall; suddenly flattened apicoventrad of this declivity, with the lateral margins of this flattened area carinoid and becoming gradually thicker and elevated to form a pair of clypeal tubercles; this flattened area becoming declivous to form a sinus between the clypeal tubercles; clypeus subvertically declivous from this flattened, tuberculated area to form a well-defined clypeal margin; labrum simple; each mandible with a prominent tooth on the external ramus; ventral surface of head and maxillary palpi as for genus.

Antennae abnormal (Pl. I, 4). Segment **I** elongate; **II** very large and abnormal, distinctly longer and wider than first, longitudinally ovate with the ventral face flattened, the flattened surface bearing a foveoid depression at apicomiesial fourth; **III** obconical, half as long as second; **IV** elongate, slightly shorter than third; **V** very abnormal, longitudinally ovate from dorsal face, mesial face swollen, ventral face irregularly obtrapezoidal with a prominent, hirsute tubercle as apex; **VI** smaller than fourth, slightly longer than wide, with hirsute ventral face slightly produced; **VII** slightly longer than sixth; **VIII** subquadrate, similar to sixth in size; **IX**, **X** and **XI** forming the usual club, with the ninth segment less obtrapezoidal than usual, and subcylindrical.

Pronotum normal for genus, with the usual minute, circular, nude, median basal fovea, and a pair of larger, pubescent, antebasal lateral foveae.

Abdomen with first two tergites normally margined; basal abdominal carinae of first tergite short and distant as described for *biocellata*.

Metasternum medianly broadly concave.

First visible and last sternite medianly flattened to concave.

Mesocoxae each with a long, straight, acute spine extending from mesioventral face. Mesotibiae each with a short, triangular cusp at apex of ventral face. Metatibiae normal, neither tumid nor modified.

Described on one male, the type specimen, taken at light; October 22, 1941, at Chilpancingo, Guerrero, Mexico, at 4100 feet elevation by Dr. Dwight M. DeLong, in whose honor the species is named.

This new species is a member of Group LV, and within this group is discriminated quickly by its abnormal second antennal segment.

ZOOGEOGRAPHIC AFFINITIES OF THE GUERRERAN FAUNA

At the present time there are 42 species, subspecies, and varieties of *Reichenbachia* recorded from Mexico and Guatemala. Of these 29 are known from the better-collected Mexico, 6 are known from Guatemala, whereas only 7 are reported from both countries (Table I), although Mexico and Guatemala have a relatively homogeneous pselaphid fauna.

Of the species listed in the preceding table, only four are unallocated to intrageneric groups. This suggests that the taxonomy of *Reichenbachia* in the Mexico-Guatemala area is relatively sound. On the other hand, the number of new species that continue to be present in modern collections suggests that our knowledge of this relatively well-known genus is far from complete. This is especially true of Guatemala.

Consequently, zoögeographic conclusions are tentative, but certain interesting features are suggested when the fauna is separated on a geographic, rather than a political basis (Table II).

The 30 species, subspecies, and varieties listed in this second table represent those neotropical forms for which definite locality data are available. In addition, there are four species known only from "Mexico" (*grouvellei*, *impunctata*, *irrita* and *luteola*); four known from localities in Guatemala that have not been satisfactorily located (*?crassipalpis*, *designata*, *diversicornis* and *?impubis*); the small Nearctic component of three species (*netтели*, *pubescens*, and *sonorensis*); and the doubtfully discriminated *sallaei*.

The position of the last named species is uncertain. Sharp (1887, p. 27) described *Bryaxis sallaei* from a series of specimens taken in Mexico (Cordoba, Veracruz), Guatemala (Cerro Zunil at 4000 to 5000

TABLE I

REICHENBACHIA OF MEXICO AND GUATEMALA

	Known only from Mexico	Known only from Guatemala	Known from both countries
a. appendiculata Raffray	x		
bicuspidata Park			x
bifoveata Fletcher	x		
biocellata (Schaufuss)	x		
carinifer Fletcher	x		
celata (Sharp)			
? crassipalpis (Sharp)		x	
d. dampfi Park	x		
d. obsoleta Park	x		
delongi new species	x		
dentisterna Park	x		
designata (Sharp)		x	
diversicornis (Sharp)		x	
diversula Raffray	x		
f. falsa Raffray	x		
f. pipa Park	x		
grouvellei Raffray	x		
guatemalensis Fletcher			x
guerrensis Park	x		
? impubis (Sharp)		x	
impunctata (Schaufuss)	x		
intacta (Sharp)		x	
irrita Raffray	x		
jaliscoensis Park	x		
juxtairrita Park	x		
latipes Fletcher	x		
luteola Raffray	x		
mexicana Raffray	x		
nettlei Park	x		
nominata (Sharp)			x
obnubila Raffray	x		
pacified Park	x		
parviceps (Sharp)			x
phantasmoidea Park	x		
pubescens (Schaufuss)	x		
quotuma Park	x		
reichei (Schaufuss)			x
sallaei (Sharp)			x
sarcinaria (Schaufuss)	x		
serapha Park		x	
sonorensis Park	x		
vinusqua Park	x		

feet, and Senahu) , and Panama (Volcan de Chiriqui at 2000 to 3000 feet) . Raffray (1904) placed the species in Group XL of *Reichenbachia*. This allocation was followed by Raffray (1908, 1911) and Park (1942, 1943) . More recently (Park, 1945) new material was reported from three localities in Chiapas (Maravillas, Mazatan, Suchiate) , and from Guatemala (Retalhuleu) . The male and female sexes were redescribed from this material and *sallaei* reallocated to Group XLVII. This reallocation was tentative. It may be that *sallaei* Park, 1945 is not *sallaei* (Sharp) , 1887, and that these reallocated specimens represent a new species. The matter is mentioned here since the Sharp record in Veracruz is an Atlantic Coastal locality, whereas the records from Chiapas and Retalhuleu, Guatemala are Pacific Coastal localities. To date, *sallaei* is the only species of *Reichenbachia* reported from both coasts without infraspecific differentiation of the population. For the present Sharp's poorly known species has been left out of the lists in the second table

Consequently, of the 42 kinds of *Reichenbachia* reported from Mexico and Guatemala, 33 may be assigned to a provisional

In the first place, this fauna is overwhelmingly neotropical: only three Nearctic species as opposed to 30 Neotropical species. This ratio may be the result of differential collecting, and the size of the Central Mexican Plateau would seem to suggest that this might be the case. This is not the author's view. Although new species of nearctic *Reichenbachia* are to be anticipated, probably the number of undescribed neotropical forms is much greater.

The family as a whole is preponderantly tropical and subtropical (Park, 1942, 1947 a, b) , predaceous, and ecologically associated with forest floor leaf mold with its abundant food stores of mites and other small arthropods. Therefore it is more likely that the small number of nearctic *Reichenbachia* in Mexico is an indirect consequence of the increasing aridity of the Central Plateau.

Second, on the basis of present information, the species of *Reichenbachia* in Mexico and Guatemala appear to be separated into three basic zoogeographic areas. These are the Central Plateau, the Atlantic Slope, and the Pacific Slope. The Central Plateau is Nearctic, ranges from 3000 to 9000 feet in elevation, and is more or less fringed and dissected by the Sierra Madre Oriental and the Sierra Madre Occidental. The Atlantic Slope and Pacific Slope are Neotropical, at least as far north as the Tropic of Cancer.

These three areas have been proposed for Mexican pselaphids in general (Park, 1943, p. 207-216, Pl. III) , and the greatly augmented data on *Reichenbachia* support this general view.

TABLE II

MAJOR SEPARATION OF NEOTROPICAL REICHENBACHIA IN MEXICO-GUATEMALA

Atlantic Drainage Slope	Pacific Drainage Slope
<i>a. appendiculata</i>	<i>bicuspidata</i>
<i>bifoveata</i>	<i>biocellata</i>
<i>carinifer</i>	<i>dampfi obsoleta</i>
<i>celata</i>	<i>delongi</i>
<i>d. dampfi</i>	<i>guerrensis</i>
<i>dentisterna</i>	<i>jaliscoensis</i>
<i>diversula</i>	<i>mexicana</i>
<i>f. falsa</i>	<i>nominata</i>
<i>f. pipa</i>	<i>pacifica</i>
<i>guatemalensis</i>	<i>reichei</i>
<i>intacta</i>	<i>serapha</i>
<i>juxtairrita</i>	<i>vinusqua</i>
<i>latipes</i>	
<i>obnubila</i>	
<i>parviceps</i>	
<i>phantasmoidea</i>	
<i>quotuma</i>	
<i>sarcinaria</i>	

Third, the populations of *Reichenbachia* of the two Neotropical Slopes are disparate from each other. Presumably, dispersal between these two areas would be feasible across the relatively narrow, low Isthmus of Tehuantepec but there are no reliable data to support such movements.. Instead, the two faunas are distinct. Where the same species occurs on both the Atlantic and Pacific coastal regions, there is subspeciation into an Atlantic and Pacific coastal subspecies, as in the case of the Atlantic *dampfi dampfi* and its Pacific counterpart, *dampfi obsoleta*.

In fact, *Reichenbachia* of the Pacific Slope of Neotropical Mexico are much more similar to those of the Pacific Slope of Guatemala than to species of the Atlantic Slope of Neotropical Mexico, and *vice versa*. For example, *bicuspidata*, *nominata*, and *reichei* are known from several Pacific Slope localities of Mexico and Guatemala, and *celata*, *guatemalensis*, and *parviceps* are recorded from several Atlantic Slope localities of these two countries.

Fourth, where sufficient data have been accumulated, species of this genus have been found in several states, and in two to three contiguous biotic provinces of Smith (1940) in both the Atlantic and Pacific Slope faunas. This would appear to indicate that species of

Reichenbachia have larger ranges than species and subspecies of *Sceloporus* lizards.

Fifth, the Guerreran fauna is typical of the Neotropical Pacific slope, and contains at least seven species: *bicuspida*, *biocellata*, *delongi*, *guerrensis*, *mexicana*, *pacifica*, and *reichei*.

SUMMARY


Three previously described species of *Reichenbachia*, *biocellata* (Schaufuss), *bicuspida* Park, and *reichei* (Schaufuss) are reported from Chilpancingo, Guerrero, Mexico at 4100 feet elevation.

Reichenbachia delongi new species is described from the same locality.

Reichenbachia known from Mexico and Guatemala are listed and their zoogeography discussed.

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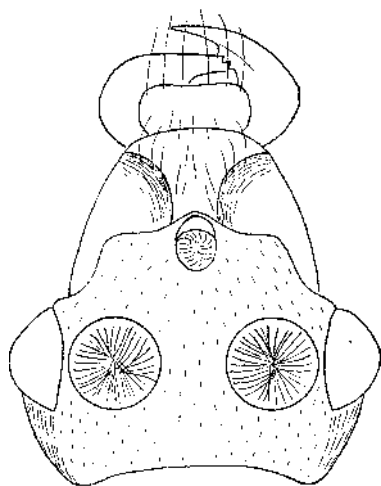
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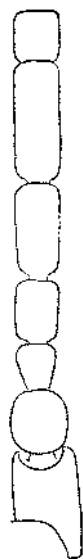
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PLATE I

1. *Reichenbachia biocellata* (Schaufuss), male, dorsal view of head.
2. *R. biocellata* (Schaufuss), male, first seven antennal segments, dorsal view.
3. *R. delongi* new species, male type, dorsal view of head.
4. *R. delongi* new species, first six antennal segments, dorsal view.
5. *R. delongi* new species, mesial view of fifth antennal segment.



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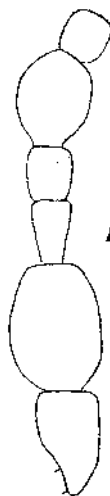
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